

In the claims

Claim 1 (currently amended): A riser reactor ~~configured~~ for a fluidized catalytic conversion process ~~including hydrocarbon cracking reactions on hydrocarbons flowing substantially from a reactor bottom to a reactor top to produce converted hydrocarbons, the reactor having a substantially vertical linear axis, a riser reactor height, the reactor bottom, and the reactor top, and wherein the riser reactor comprises in order from the reactor bottom to the top:~~

a.) a prelift zone having a prelift zone diameter and a prelift zone height,

b.) a first reaction zone having a first reaction zone diameter and a first reaction zone height ~~and wherein the first reaction zone is configured so that a hydrocarbon cracking reaction taking place in the first reaction zone takes place at higher reaction temperatures, higher ratios of catalyst to oil, and shorter reaction times than, respectively, a reaction temperature, ratio of catalyst to oil, and reaction time in a second reactor zone,~~

c.) ~~[[the]]~~a second reaction zone having a second reaction zone height~~[[h]]~~ and a second reaction zone diameter that is larger than the first reaction zone diameter ~~and wherein said second reaction zone is configured so that a hydrocarbon cracking reaction taking place in the second reaction zone takes place at lower reaction temperature, lower ratio of catalyst to oil, and longer reaction time than, respectively, the reaction temperature, ratio of catalyst to oil, and reaction time in the first reactor zone,~~

d.) an optional outlet zone having an outlet zone diameter that is reduced with respect to the second reaction zone diameter.

Claim 2 (previously presented): The reactor of claim 1 wherein the total height of said prelift zone, said first reaction zone, said second reaction zone, and said outlet zone is in the range of from about 10 meters to about 60 meters.

Claim 3 (previously presented): The reactor of claim 1 wherein the diameter of said prelift zone is in the range of from about 0.02 meters and about 5 meters and the prelift zone height is in the range of from about 5% to about 10% of the height of the riser reactor.

Claim 4 (previously presented): The reactor of claim 1 wherein the ratio of the first reaction zone diameter to said prelift zone diameter is from about 1:1 to about 2:1 and the height of said first reaction zone is from about 10% to about 30% of the height of the riser reactor.

Claim 5 (previously presented): The reactor of claim 1 wherein the ratio of said second reaction zone diameter to said first reaction zone diameter is in the range of from about 1.5:1 to about 5:1 and the height of said second reaction zone is in the range of from about 30% to about 60% of the height of the riser reactor.

Claim 6 (previously presented): The reactor of claim 1 wherein the ratio of said outlet zone diameter to said first reaction zone diameter is in the range of from about 0.8:1 to about 1.5:1 and the height of said outlet zone is generally from about 0% to about 20% of the height of the riser reactor.

Claim 7 (previously presented): The reactor of claim 1 further comprising a first junction section between said first reaction zone and said second reaction zone, and wherein said first junction section has a circular truncated cone shape with a vertical section vertex angle with respect to the reactor axis in the range of about 30°~80°.

Claim 8 (previously presented): The reactor of claim 1 further comprising a second junction section between said second reaction zone and said outlet zone, and wherein said second junction section has a circular truncated cone shape with a vertical section vertex angle with respect to the reactor axis in the range of about 45°~85°.

Claim 9 (new): A riser reactor configured for a fluidized catalytic conversion process including hydrocarbon conversion reactions on hydrocarbons flowing substantially from a reactor bottom to a reactor top to produce converted hydrocarbons, the reactor having a substantially

vertical linear axis, a riser reactor height, the reactor bottom, and the reactor top, and wherein the riser reactor comprises in order from the reactor bottom:

a.) a prelift zone having a prelift zone diameter and a prelift zone height,

b.) a first reaction zone having a first reaction zone diameter and a first reaction zone height and wherein the first reaction zone is configured so that a hydrocarbon cracking reaction taking place in the first reaction zone takes place at higher reaction temperatures, higher ratios of catalyst to oil, and shorter reaction times than, respectively, a reaction temperature, ratio of catalyst to oil, and reaction time in a second reaction zone,

c.) the second reaction zone having a second reaction zone height and a second reaction zone diameter that is larger than the first reaction zone diameter and wherein said second reaction zone is configured so that a hydrocarbon conversion reaction taking place in the second reaction zone takes place at lower reaction temperature, lower ratio of catalyst to oil, and longer reaction time than, respectively, the reaction temperature, ratio of catalyst to oil, and reaction time in the first reaction zone, and

d.) an outlet zone having an outlet zone diameter that is reduced with respect to the second reaction zone diameter.

Claim 10 (new): The reactor of claim 9 wherein the total height of said prelift zone, said first reaction zone, said second reaction zone, and said outlet zone is in the range of from about 10 meters to about 60 meters.

Claim 11 (new): The reactor of claim 1 wherein the diameter of said prelift zone is in the range of from about 0.02 meters and about 5 meters and the prelift zone height is in the range of from about 5% to about 10% of the height of the riser reactor.

Claim 12 (new): The reactor of claim 9 wherein the ratio of the first reaction zone diameter to said prelift zone diameter is from about 1:1 to about 2:1 and the height of said first reaction zone is from about 10% to about 30% of the height of the riser reactor.

Claim 13 (new): The reactor of claim 9 wherein the ratio of said second reaction zone diameter to said first reaction zone diameter is in the range of from about 1.5:1 to about 5:1 and the height of said second reaction zone is in the range of from about 30% to about 60% of the height of the riser reactor.

Claim 14 (new): The reactor of claim 9 wherein the ratio of said outlet zone diameter to said first reaction zone diameter is in the range of from about 0.8:1 to about 1.5:1 and the height of said outlet zone is generally from about 0% to about 20% of the height of the riser reactor.

Claim 15 (new): The reactor of claim 9 further comprising a first junction section between said first reaction zone and said second reaction zone, and wherein said first junction section has a circular truncated cone shape with a vertical section vertex angle with respect to the reactor axis in the range of about 30°~80°.

Claim 16 (new): The reactor of claim 9 further comprising a second junction section between said second reaction zone and said outlet zone, and wherein said second junction section has a circular truncated cone shape with a vertical section vertex angle with respect to the reactor axis in the range of about 45°~85°.